NORTH DAKOTA 35 BURLEIGH

FIELD APPRAISAL ANALYSIS

Prepared by
Field Appraisal Section
Program Analysis Division
RURAL ELECTRIFICATION ADMINISTRATION

Field Appraisal
Completed in
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August 27, 1953

Field Appraisal Section
Program Analysis Division

SUMMARY AND CONCLUSION
NORTH DAKOTA 35 BURLEIGH

AREA CHARACTERISTICS

The population of the area increased 10 percent between 1940 and 1950. During the same period, rural-farm population decreased 8 percent. The major source of agricultural income in 1949 was from livestock (61 percent). The average value of land and buildings was $15,000, which was 80 percent greater than in 1945. Gross income from the sale of farm products averaged $5,400 in 1949. Nearly 10 percent of the farmers worked 100 or more days off the farm. The topography for the most part is gently rolling. The soils are dark brown silt loams, loams and sandy loams.

ULTIMATE NUMBER OF CONSUMERS

On June 5, 1953, this cooperative was serving a total of 1,370 consumers. The manager has estimated that a total of 1,824 consumers may be served ultimately. From a careful consideration of related facts pertaining to the area, the manager's estimate appears to be reasonable.

ESTIMATED FUTURE CONSUMPTION OF ELECTRICITY

This system was energized in 1948. Since 1949, average monthly farm consumption rose from 113 kwh to 192 kwh in 1952. This is an increase of 26 kwh in average monthly usage for each year. Farm consumers indicated that they expected to increase their use of electricity 59 percent by 1956. Nonfarm and town residential consumers indicated an increase of 75 percent during the same period.

Increasing cost of purchased power and the active competition of LP gas are serious deterrents to future use of electricity in this area. The survey revealed that by 1956 two-thirds or more of the consumers in the area will be using LP gas for one or more purposes.

Based on all factors believed to be significant, this analysis leads to the following estimates, which are certified as being reasonable and may be expected to be attained in the years indicated:

Class of Consumer	12 Months Ended May 31, 1953	1955	1958	1963
Farm	205	250	315	380
Nonfarm and Town Residential	128	150	175	200
Small Commercial	188	225	255	300
Public Buildings	26	40	50	65
Large Commercial (annual)				
Occident Seeds (drying plant)		15,000	15,000	15,000
Farmers' Elevator and Merc. Co.		20,000	20,000	20,000
Peavey Elevator		3,000	3,000	3,000
Pickardville Grain Co.		1,000	1,000	1,000

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August 27, 1953

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ANALYSIS OF BASIC FACTORS RELATED TO THE RURAL ELECTRIFICATION LOAN FOR NORTH DAKOTA 35 BURLEIGH
(Reappraisal)

This analysis of basic factors related to the future consumption of electricity by consumers of the Capital Electric Cooperative, Inc., with headquarters at Bismarck, North Dakota (Figure 1), is based on a field study conducted by Arthur S. Hiatt, Agricultural Economist, and was completed in June 1953. This analysis was prepared by Joseph C. Podany, Agricultural Economist.

The original appraisal was completed for this system in June 1948 prior to its being energized.1/

The field work for the present appraisal consisted primarily of interviews with a responsible member of 106 served and prospective consumer units. Of these, 55 were served farm consumers, 40 were served nonfarm and town residentials and 11 were unserved farm and nonfarm units.2/ Local businessmen, bankers, and agricultural leaders were consulted regarding local economic trends and their estimates of the future for the area with respect to the use of electric power. Supporting economic data were obtained from the U. S. Census for Burleigh County and from other secondary sources.

ULTIMATE NUMBER OF CONSUMERS

On June 5, 1953, the cooperative was serving 1,370 members, of which 1,099 were farm consumers, 144 were nonfarm residential consumers3/, 33 were small commercials, 4 were large commercials, and 90 were schools and churches. The manager has estimated that a total of 1,824 may be served ultimately (Figure 2). This is an increase of 33 percent over those presently receiving service. The ultimate number,

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1/ See appraisal analysis for subject system dated June 26, 1948.

2/ Farm consumer respondents were randomly selected and comprise an area sample of approximately 5 percent of the farm units in the system area. Nonfarm and town residential consumer respondents were randomly selected from the system's billing records and comprise approximately 30 percent of the nonfarm and town residentials now being served.

In addition, 86 out of 96 prospective consumer respondents in the 1948 appraisal were reinterviewed. The other 10 were accounted for as follows: 4 were not known to the present cooperative officials, 4 have never taken service, 1 was not at home at time of visit, and 1 was receiving service from another electric cooperative.

3/ The nonfarm and town residents and stockwell pumps mentioned in the manager's letter (Figure 2) are carried in the operating reports as nonfarm consumers.

according to the manager, includes 1,197 farm consumers, which exceeds the number in this class now being served by 98. Some confusion, unfortunately, is created by the last paragraph of the manager's letter wherein it is stated that 200 farms are still to be served, with 98 expected to take service within 18 months. However, the appraiser learned that the manager really expects only 98 farms out of the 200 to ever take service. The balance of the unserved farms are either expected to go out of existence by merger into larger units or else are not ever expected to desire service. The appraiser felt that an ultimate number of about 1,200 farm consumers was reasonable.

The manager expects a considerable increase in nonfarm residential and town residential consumers. According to the letter (Figure 2), there are 137 consumers now being served in these two classes. The ultimate number is estimated at 470, or an increase of 243 percent over the present number. Most of the increase in number of nonfarm and town residentials is expected to occur around the city of Bismarck, which increased in population by 20 percent between 1940 and 1950. Service to the homes directly outside the city limits of Bismarck is being provided by the cooperative. However, only a portion of the potentials are now in existence or are in evidence of soon coming into existence.

The appraiser was of the opinion that the manager's estimate of nonfarm and town residentials ultimately to be served by the cooperative was reasonable. In making his evaluation the appraiser gave due consideration to the opinions of: (1) owners platting their land for residential purposes; (2) the cooperative's board of directors; and (3) a representative of the Standard Oil Company which is constructing a refinery at Mandan and expects to employ a permanent staff of about 350 people.

The manager's letter also lists four large commercial users as being presently connected but none ultimately. The appraiser believes the manager's letter to be in error and that the large power consumers will continue to receive service from the cooperative. Otherwise, the appraiser feels the manager's estimate is reasonable.

The appraiser has stated that the service boundaries are well established and that no appreciable blocks of unserved territory remain within the system. He has further stated that few new farmsteads were noted in the area and that a number of the farms carried on the cooperative's "Potential List" did not have any houses. On the basis of these and other considerations previously presented and those brought forth in the manager's letter, it appears that 1,200 farm consumers would be reasonable as a maximum ultimate number.

Based on the opinion of the appraiser, the manager's estimate of 470 nonfarm and town residential consumers to be served ultimately by the cooperative is believed reasonable.

The manager's estimates of ultimate numbers of other consumers (with the exception of large commercials previously noted) appear reasonable. The manager's estimate of 1,824 consumers appears to be a reasonable estimate of the total to be served by the system.

NATURE OF PRESENT AND INDICATED FUTURE CONSUMPTION OF ELECTRICITY AS REVEALED BY THE SURVEY

A tabulation of the raw data secured from the respondents revealed the following average monthly consumption figures:

TABLE I

INDICATED MONTHLY KWH CONSUMPTION[a/]

Consumer Class	Present	Future[b/]	Percent Increase
Farm	206	327	59
Nonfarm and Town Residential	146	255	75

a/ Based on indications by respondents in the survey and average energy requirements as determined by REA on a countrywide basis. Farm consumers were using electricity at 119 percent of the average rate established by REA on a countrywide basis. Nonfarm residential consumers were using 127 percent of average.
b/ Based on what respondents expect to add in 3 years.

Historical consumption records for farm and nonfarm and town residential consumers in the survey indicate a rising average consumption. Farm consumers added since 1950 appear to have attained lower initial averages than those connected during the first year (Table II). At the same time there appears to be some tendency for the more recently connected nonfarm and town residential consumers to attain higher initial averages than those connected in previous years (Table III).

TABLE II

AVERAGE MONTHLY KWH CONSUMPTION OF 53 FARM CONSUMERS

Total Number of Years With Electricity	Number of Schedules	Average KWH Consumption Per Month			
		1949	1950	1951	1952
4	13	177	228	288	352
3	15	---	115	228	301
2	17	---	---	130	179
1	8	---	---	---	100
Weighted Average		177	172	213	245

TABLE III

AVERAGE MONTHLY KWH CONSUMPTION OF
32 NONFARM AND TOWN RESIDENTIAL CONSUMERS

Total Number of Years With Electricity	Number of Schedules	Average KWH Consumption Per Month			
		1949	1950	1951	1952
4	8	69	108	160	212
3	7	--	78	130	211
2	7	--	--	55	91
1	10	--	--	--	212
Weighted Average		69	96	119	185

A saturation of electrical appliances and equipment measured in terms of the percent of consumers presently having them and a corresponding percent anticipated in the future was compiled from field schedules of presently connected consumers. The difference in saturation, as revealed by the increase in percentage points, was converted to future kwh requirements per 100 consumers for each appliance and piece of equipment. This tabulation is shown in Table IV.

TABLE IV

PRESENT AND INDICATED SATURATION OF ELECTRICAL APPLIANCES AND EQUIPMENT AND CORRESPONDING ESTIMATED INCREASE IN KWH USAGE OF FARM AND NONFARM RESIDENTIAL CONSUMERS

Appliance or Equipment	Farm				Nonfarm			
	Percent of Consumers[A]		Increase[B]		Percent of Consumers[A]		Increase[B]	
	Presently Using	Indicating Future Use	Percentage Points	KWH Usage Per 100 Consumers	Presently Using	Indicating Future Use	Percentage Points	KWH Usage Per 100 Consumers
Air Compressor	16	18	2	70	—	—	—	—
Battery Charger	24	24	—	—	—	—	—	—
Broiler	3	5	2	100	—	—	—	—
Brooder (Infrared)	2	2	—	—	—	—	—	—
Brooder (Hover)	33	40	7	1,281	2	2	—	—
Brooder (Pig)	14	16	2	206	5	5	—	—
Churn	5	7	2	6	—	—	—	—
Clock	62	62	—	—	70	70	—	—
Clothes Drier	4	6	2	1,400	—	—	—	—
Coal Stoker	2	2	—	—	2	2	—	—
Cream Separator	56	62	3	105	—	—	—	—
Dishwasher	2	4	2	60	—	—	—	—
Drill Press	27	29	2	24	2	2	—	—
Elevator (Grain)	18	18	—	—	—	—	—	—
Fan (Cent. Hot Air Cir.)	9	11	2	480	10	12	2	480
Fan (Exhaust)	2	2	—	—	2	2	—	—
Fan (Household)	24	24	—	—	28	30	2	30
Fan, Vent. (Dairy Barn)	—	2	2	480	—	—	—	—
Fan, Vent. (Livestock Barn)	—	—	—	—	2	2	—	—
Feed Chopper	2	—	2	12	—	—	—	—
Feed Grinder or Roller	—	2	2	1,500	—	—	—	—
Food Mixer	56	63	7	175	32	42	10	250
Freezer (Home)	29	53	24	21,600	12	22	10	9,000
Garden Watering	—	—	—	—	5	7	2	150
Headbolt Heater	29	29	—	—	7	7	—	—
Heating Pad	15	15	—	—	—	—	—	—
Hot Plate	11	13	2	140	10	12	2	140
Iron	96	96	—	—	87	87	—	—
Ironer	5	5	—	—	5	5	—	—
Lighting: Beef Cattle Barn	—	2	2	24	—	—	—	—
Dairy Barn	7	7	—	—	—	—	—	—
Garage	33	36	3	24	12	17	5	40
General Barn	84	87	3	72	2	2	—	—
Grain & Feed Strge. Bldg.	22	24	2	4	—	—	—	—
Hog Barn	5	5	—	—	—	—	—	—

Appliance or Equipment	Farm: Percent of Consumers A/: Presently Using	Farm: Percent of Consumers A/: Indicating Future Use	Farm: Increase B/: Percentage Points	Farm: Increase B/: KWH Usage Per 100 Consumers	Nonfarm: Percent of Consumers A/: Presently Using	Nonfarm: Percent of Consumers A/: Indicating Future Use	Nonfarm: Increase B/: Percentage Points	Nonfarm: Increase B/: KWH Usage Per 100 Consumers
House Lighting	100	100	—	—	100	100	—	—
Milk House	2	2	—	—	—	—	—	—
Other Buildings	9	9	—	—	3	5	2	24
Poultry Brooder House	27	29	2	70	3	5	2	10
Poultry Laying House	11	13	2	10	2	2	—	—
Shop	25	27	2	24	—	—	—	—
Yard	93	95	2	36	38	40	2	36
Livestock Watering	51	56	5	900	10	12	2	360
Milk Pasteurizer	4	6	2	240	—	—	—	—
Milking Machine	9	22	13	4,680	—	—	—	—
Oil Furnace	7	7	—	—	10	10	—	—
Percolator	18	18	—	—	7	7	—	—
Power Saw	13	13	—	—	7	7	—	—
Pressure System (Less than 22')	4	6	2	360	—	—	—	—
Pres. Sys. (Greater than 22')	27	53	26	6,240	43	65	22	5,280
Radio	94	96	2	100	98	98	—	—
Range	25	49	24	28,800	15	40	25	30,000
Refrigerator	71	87	16	5,760	—	—	—	—
Roaster	2	4	2	960	2	2	—	—
Seed Cleaner	16	16	—	—	—	—	—	—
Sewing Machine	16	18	2	20	5	7	2	20
Soldering Iron	22	24	2	30	—	—	—	—
Space Heater (Portable)	7	7	—	—	8	10	2	140
Stock Tank Heater	16	18	2	300	—	—	—	—
Sump Pump	2	2	—	—	—	—	—	—
TV Receiver	—	9	9	3,240	2	7	5	1,800
Toaster	80	84	4	140	70	70	—	—
Tool Grinder	24	26	2	50	2	2	—	—
Vacuum Cleaner	62	65	3	60	28	35	7	140
Ventilator (Window)	2	2	—	—	2	2	—	—
Waffle Iron	25	31	6	150	13	15	2	50
Washing Machine	93	95	2	70	70	72	2	70
Water Heater With Bath	13	35	22	66,000	10	35	25	75,000
Water Heater Without Bath	2	2	—	—	—	—	—	—
Water Heater (Pour-In)	2	2	—	—	—	—	—	—
Water Pail	2	2	—	—	—	—	—	—
Water Warmer	12	16	4	240	2	2	—	—
Welder	20	29	9	675	—	—	—	—

A/ Based on indications of presently connected consumers.

B/ Based on average energy requirements determined by REA. Data do not reflect instances where more than one of the same appliance exist per consumer. These cases are rare and do not affect the over-all pattern materially.

ECONOMIC CHARACTERISTICS

The population of the area increased about 10 percent between 1940 and 1950. Rural-farm population decreased 8 percent. Nonfarm and urban population increased, respectively, 12 and 20 percent.

In 1949, the major source of agricultural income (61 percent) was from livestock. Dairy products accounted for 8 percent, poultry products 2 percent, and other livestock (principally cattle and calves) accounted for 51 percent. Thirty-nine percent of the cash farm income was from crops--mostly wheat, flax and other small grains. About 85 percent of the farms were owned in full or in part. Farms average over 880 acres in size, 150 acres more than the average size for the State of North Dakota.

In 1950, the value of land and buildings was about $15,000, or 80 percent greater than in 1945. Gross income from sale of farm products averaged $5,400 for the area in 1949. Nearly 10 percent of the farmers worked off the farm 100 or more days in 1949, while only about 3 percent did so in 1944.

The economy of the area is primarily agricultural. Little opportunity for off-farm employment exists. Though there has been some activity in connection with oil leases, no wells have been drilled within the area, and none are reportedly planned in the near future. However, many of the oil companies engaged in exploration and development of fields in North Dakota maintain offices at Bismarck because of adequate facilities there. This has been partly responsible for the recent growth of the city.

Marketing facilities appear to be adequate. Most of the cattle move through the stockyards at West Fargo, North Dakota. Various grain elevators are located at easily accessible places throughout the system area. Broiler processing facilities are in Bismarck, and some of the farms nearby are converting to broilers on a fairly large scale.

Railroads and highways traverse the area. County roads are gravelled and generally well maintained. The local roads follow section lines and are kept in fairly good condition but are treacherous and often impassable after rains.

PHYSICAL CHARACTERISTICS

The service area is in the northeastern Missouri Plateau of central North Dakota. The altitude averages around 1,700 feet.

The topography is gently rolling, interspersed with hilly to broken land. Part of the area in northern Burleigh and southern Sheridan Counties contains sloughs which have in the recent wet years become veritable lakes, whereas they were completely dry during the droughts of the 1930's and were then utilized as pasture land.

The soils are dark brown, productive silt loams, loams, and sandy loams. The Missouri River provides drainage for the area.

The average annual precipitation (at Bismarck) is 15 inches, with 83 percent falling during the months of April through October. The length of the growing season averages 140 days. The average January temperature is 9° F. and the average for July is 71° F. Droughts, floods, hailstorms, and sleet storms occur rather frequently and are of a pronounced severity.

ANALYSIS OF FUTURE KWH CONSUMPTION

This system was energized in 1948. Since 1949, average monthly farm consumption has increased from 113 kwh to 192 kwh in 1952. This is an increase of 26 kwh in average monthly usage for each year. Table II shows, however, that new consumers are generally being added at levels of consumption considerably lower than that of the initial consumption of earlier consumers.

If consumption is to increase at the rate indicated in Table I, we might expect an average monthly farm figure of 305 kwh (192 x 159). The average monthly nonfarm and town residential figure would be 210 kwh (120 x 175). To achieve these increases, the specific additional kwh resulting from indicated future saturation of appliances and equipment as shown in Table IV must be attained.

Ninety-one percent of the indicated increase would need to occur in the household. Moreover, 80 percent of the indicated increase would need to occur as a result of the addition of water heaters, ranges and home freezers (Table V).

There are other factors which must be considered in arriving at estimates of future electric consumption. Among these are (1) the extent to which LP gas use is likely to reduce the indicated future increases in electrical usage, (2) a consideration of the attainment of selected past indications (1948 appraisal) regarding use of electricity as revealed by re-interviews of the same consumer units, and (3) the extent to which other related economic trends are likely to have their impact upon the indicated future consumption.

TABLE V

INDICATED AND ESTIMATED KWH USAGE, FARM CONSUMERS BY CHARACTER OF LOAD PER 100 CONSUMERS a/

Use	Indicated Future Saturation	KWH Usage Per 100 Consumers: Indicated Increase	Percent of: Indicated Increase	Estimated Increase	Present Use	Estimated Future Total
Major Household Uses						
Water Heater	37	61,261	45.0	30,630	36,200	66,830
Range	49	26,732	19.6	13,366	27,846	41,212
Home Freezer	53	20,049	14.7	16,039	24,226	40,265
Pressure System (greater than 22')	53	5,792	4.3	3,186	6,015	9,201
Refrigerator	87	5,346	3.9	5,078	23,724	28,802
Television Receiver	9	3,008	2.2	2,707	—	2,707
Clothes Drier	6	1,299	1.0	650	2,599	3,249
Major Productive Uses						
Milking Machine	22	4,344	3.2	3,910	3,008	6,918
Feed Grinder	2	1,392	1.0	1,253	—	1,253
Brooder (Hover)	40	1,189	0.9	1,070	5,605	6,675
All Other Uses	—	5,690	4.2	5,121	100,942	106,063
Total		136,102	100.0			
Estimated annual average increase (total) in kwh consumption per 100 consumers - 1956				83,010		313,175
Estimated annual average increase (total) in kwh consumption per consumer - 1956				830		3,132
Estimated monthly average increase (total) over a 3-year period--1953-1956				69		261

a/ Adjusted to take into account that appliance usage and amount of electricity required is 119 percent of average for United States as determined by REA and average consumption of respondents was 28 percent greater than for all consumers.

Table VI indicates that nearly two-thirds of the farm consumers are presently using LP gas for one or more purposes. The remaining one-third of the farm consumers have indicated no intentions of using gas. In contrast, about three-fourths of the nonfarm consumers are presently using LP gas and an additional 5 percent expect to in the future. The remainder have reported no intentions of doing so. Thus, two-thirds or more of the total future indicated residential load will be in active competition with LP gas.

TABLE VI

STATUS OF LP GAS USE, 54 FARM RESPONDENTS IN RANDOM SAMPLE SURVEY

Consumers' Position With Respect to Use of Gas	Number in Survey	Percent of Total
Not using and not planning to use	19	35
Presently using LP gas	35	65
Used for:		
Cooking	35	
Water Heating	6	
House Heating	1	
Refrigeration	7	
Total	54	100

A comparison of the saturation of appliances and equipment presented in Table VII shows that the respondents have fulfilled their intentions to use only a few of the major appliances, namely, refrigerators, home freezers and ranges. They have only partially fulfilled their intentions to use irons, radios, water heaters (total), and water systems. The principal reason given by respondents for not adding more appliances was that they were adding them as fast as they could afford to purchase them. Other reasons given were: younger people left home (draft and otherwise) and old folks see no need to add more appliances; farm operated by tenant who is uncertain of tenure, and landlord refuses to provide heavier wiring where wiring not adequate to handle heavier appliances.

TABLE VII

ATTAINMENT OF PAST INDICATIONS AND INDICATIONS OF FUTURE USE OF ELECTRICAL APPLIANCES AND EQUIPMENT[a]

Item	Saturation 1948 Indicating Intentions To Use	Saturation 1953 Using	Saturation 1953 Indicating Future Use	Indicated KWH Usage Per 100 Consumers 1948	1953 Present	1953 Future
Iron	100	92	93	10,000	9,700	9,800
Radio	100	98	99	9,700	12,600	12,700
Refrigerator	78	86	91	28,080	32,040	33,840
Pressure System (greater than 22')	51	30	47	12,240	7,920	12,000
Water Heater (with bath)	28	15	45	84,000	48,000	13,800
Home Freezer	23	22	45	20,700	19,800	40,500
Range	19	26	56	22,800	32,400	68,400
Pressure System (less than 22')	15	10	13	2,700	1,800	2,340
Water Heater (without bath)	1	5	5	2,400	12,000	12,000

a/ Served farms only. Based on 86 schedules from consumer units interviewed in 1948 and re-interviewed in 1953.

Additional data from the office records of the cooperative show that the number of consumers with hot water heaters has more than doubled within the past year. Below is a comparison between water heater consumers and their consumption as of April 1952 and April 1953:

	Number of Water Heaters April 1952	Number of Water Heaters April 1953	Average Monthly KWH Consumption All Water Heater Users April 1952	Average Monthly KWH Consumption All Water Heater Users April 1953
Farm	67	138	543	623
Nonfarm	4	12	392	506
Total	71	150	535	614

In addition to this, the cooperative conducted an appliance survey by mail some months ago. Questionnaires were sent to 1,257 of their farm and nonfarm residential consumers. Responses were received from 868, which is a 69 percent

response. The consumers were asked to indicate which appliances they had on hand at that time and which appliances they planned to add in one year. The following tabulation presents a summary of the four major uses of electricity as revealed by the survey:

	Number on Hand	Number To Be Added In One Year	Total
Ranges	220 (25%)	69 (8%)	289 (33%)
Refrigerators	670 (77%)	58 (7%)	728 (84%)
Home Freezers	256 (29%)	85 (10%)	341 (39%)
Water Systems	261 (30%0	108 (12%)	369 (42%)

The retail rate schedule in effect at the time of the appraisal was as follows:

Farm and Home Service
(With or Without Electric Range)

First 40 kwh per month @ $0.125 per kwh
40 to 80 kwh per month @ $0.06 per kwh
80 to 200 kwh per month @ $0.03 per kwh
Over 200 kwh per month @ $0.02 per kwh

Farm and Home Service
With Controlled Water Heater

First 40 kwh per month @ $0.125 per kwh
Next 40 kwh per month @ $0.06 per kwh
Next 200 kwh per month @ $0.0125 per kwh
Next 120 kwh per month @ $0.03 per kwh
Over 400 kwh per month @ $0.02 per kwh

From Table VIII, trends in the area relative to the State indicate the service area to be generally holding its own. Populationwise the area is increasing in importance relative to the State. Though the trend in valuations of land and buildings is favorable to the area, the absolute values are below the State average. However, the trend of average farm income is unfavorable to the area, as well as being below the State average in absolute terms. Power costs have risen, both absolutely and relatively, since 1949 as an increasing portion of the power was purchased from power companies.

TABLE VIII

TRENDS RELATED TO THE RATE OF INCREASE
IN USE OF ELECTRIC POWER

Item and Relationship	Trend							
Population	1920		1930		1940		1950	
Service Area	18,127		22,301		25,184		27,742	
State of North Dakota	646,872		680,845		641,935		619,636	
Ratio Area to State	.028		.033		.039		.045	
Number of Farms	1910	1920	1925	1930	1935	1940	1945	1950
Service Area	1,416	1,375	1,245	1,338	1,406	1,212	1,137	1,136
State of North Dakota	74,360	77,690	75,970	77,975	84,606	73,962	69,520	65,302
Ratio Area to State	.019	.018	.016	.017	.017	.016	.016	.017
Average Income From All Farm Products Sold					1939	1944	1949	
Service Area					$1,360	$3,936	$5,407	
State of North Dakota					1,357	5,248	6,129	
Ratio Area to State					1.00	.75	.88	
Average Value of Land and Buildings					1940	1945	1950	
Service Area					$4,592	$8,224	$14,895	
State of North Dakota					6,628	10,189	18,014	
Ratio Area to State					.69	.81	.83	
Cost of Purchased Power Per KWH					1949	1950	1951	1952
North Dakota 35 Burleigh								
Source--Bureau of Reclamation					0.54¢	0.52¢	0.52¢	0.53¢
Source--Private Power Company					1.58¢	1.74¢	1.69¢	1.54¢
Weighted Average					0.66¢	1.02¢	1.04¢	0.96¢
All Co-ops in North Dakota					1.38¢	1.46¢	1.39¢	1.29¢
Ratio Area to State					.48	.70	.75	.74
Average Monthly KWH Consumption Per Farm Consumer					1949	1950	1951	1952
North Dakota 35 Burleigh					113	133	157	192
Neighboring Co-ops					199	173	184	205
Ratio North Dakota 35 Burleigh to Neighboring Co-ops					.57	.77	.85	.94

The average kwh consumption, though below that of the neighboring cooperatives, has been increasing more rapidly than that of the neighbors.

Considering the heavy present use and probable continued use of LP gas in the service area, the attainment of past indications (1948 appraisal) and the fact that the area characteristics show few secular advantages over similar State characteristics, the attainment of indicated consumption within the 3-year period appears to be unlikely at this time. On the basis of these and related factors, it is estimated that within 3 years' time, 50 percent increase for water heaters, ranges, and clothes driers will be realized. About 95 percent of the increase attributed to refrigerators, 80 percent to home freezers, 55 percent to pressure systems, and 90 percent to television receivers are also expected to be realized. It is also estimated that 90 percent of the indicated increase due to productive and other uses will be realized. Kilowatt-hour increases at these rates are shown in Table V.

Commercial Consumption

Name	KW Demand	Average Monthly KWH Consumption 12 Months Ended 4/30/53
Occident Seeds (drying plant)	40	820
Farmers' Elevator & Merc. Co.	60	669
Peavey Elevator	7.5	79
Pickardville Grain Company	15	37

These four commercial consumers are shown on the operating report as large commercials.

In view of the data available and the foregoing analysis, it is certified that the following estimates are reasonable and may be expected to be attained in the years specified:

Class of Consumer	12 Months Ended May 31, 1953	1955	1958	1963
Farm	205	250	315	380
Nonfarm and Town Residential	128	150	175	200
Small Commercial	188	225	255	300
Public Buildings	26	40	50	65
Large Commercial (annual)				
Occident Seeds (drying plant)		15,000	15,000	15,000
Farmers' Elevator & Merc. Co.		20,000	20,000	20,000
Peavey Elevator		3,000	3,000	3,000
Pickardville Grain Co.		1,000	1,000	1,000